PUBLIC ABSTRACT

Applicant (primary) name: Silverado Green Fuel Inc.

Applicant's address: POBox 83730, Fairbanks, AK 99708
Street City State Zipcode

Team Members (if any):
(listing represents only participants at time of application, not necessarily final team membership)

Great Northern Engineering, Anchorage, AK 99645
Name City State Zipcode

Energy Pacific Corp., Boise, ID 83706
Name City State Zipcode

Mineral Industry Res. Lab, Fairbanks, AK 99775
Name City State Zipcode

(Use continuation sheet if needed.)

Proposal Title: Clean Coal Power Generation with Low-Rank Coal-Water Fuel

Commercial Application: **9** New Facilities ■ Existing Facilities

9 Other, Specify: _____

Technology Type: Clean Coal Power Generation with Low-Rank Coal-Water Fuel

Estimated total cost of project:
(May not represent final negotiated costs.)

Total Estimated Cost: $ 23,961,760

Estimated DOE Share: $ 9,718,366

Estimated Private Share: $ 14,243,394

PUBLIC ABSTRACT (cont'd)

Anticipated Project Site(s): Fairbanks North Star Borough, AK 99709
Location (city, county, etc.) State Zipcode

Location (city, county, etc.) State Zipcode

Location (city, county, etc.) State Zipcode

Type of coal to be used: AK Subbituminous Coal
Primary Alternate (if any)

Size or scale of project: 120 tpd
Tons of coal/day input
and/or
Megawatts, Barrels per day, etc.
Other (if necessary)

Duration of proposed project: 48
(From date of award) (Months)

PRIMARY CONTACT:

For additional information, interested parties should contact: Name Edward J. Armstrong

Position President

Telephone Number (907)479-7014

Company Silverado Green Fuel Inc.

e-mail address armstrng@eagle.ptialaska.net

Address POBox 83730

City Fairbanks, State AK Zipcode 99708

Alternative Contact:

Name

Position

Telephone Number ( )

Company

e-mail address

Address

City State Zipcode

PUBLIC ABSTRACT (cont'd)

Brief description of project:

Clean Coal Power Generation from Low-Rank Coal-Water Fuel (LRCWF) Commercial Demonstration Project

The US has the largest share of the world's fossil energy reserves with over 25% of the proven coal reserves. US coal reserves are ample to fuel America's growth for centuries, whereas the combined gas and oil reserves can only provide a few decades of supply, at most. America's ascension to the most powerful and affluent society on Earth is due in large part to its abundance of domestic energy and low cost electrical power.

Decades of poor coal mining practices, dust generation during handling and shipping, large unsightly coal stockpiles, and coal burning and coke making without emission controls, have earned coal the title "dirty fuel." In spite of extensive mine land reclamation programs, tremendous advances in emission controls and the development of clean coal technologies, the public perception has changed little. Since low cost power produced from coal is the only choice we have for the foreseeable future, we must continue to develop ways to use coal in a more environmentally acceptable manner. This is the driving force for President Bush's Energy Policy Plan, the National Energy Technology Center's Vision 21 Program, and the DOE's Clean coal Power Initiative.

By contrast oil isn't viewed as a dirty fuel, despite the fact that if spilled it is hazardous and even toxic. Furthermore, the pressurized oil in thousands of miles of pipelines throughout the US is highly flammable and can even form explosive mixtures if a pipeline is ruptured either through a natural disaster or a terrorist act. So how can a fuel that is hazardous and can be highly toxic be regarded as a "clean" fuel? The answer is simple: **Oil is used sight unseen**. If coal could be used sight unseen in today's modern and tomorrow's advanced utilities, the environment would benefit and the public's perception of coal as a dirty fuel would begin to change.

Silverado's proposed Clean Coal Power from Low-Rank Coal-Water Fuel (LRCWF) Demonstration is designed to show the economic feasibility and environmental superiority of converting LRC into a liquid fuel that can be use efficiently in oil-fired generating systems (boilers, diesels and turbines), integrated gasification combined cycle power plants, and other advanced combustors operating at high pressures. LRCWF is not a new fuel, but a new fuel form. Burning or gasifying LRCWF is simply burning a beneficiated LRC. Thus LRCWF retains all the desirable LRC combustion characteristics needed for advanced power generating systems, while eliminating all of the utilization and environmental problems associated with bulk coal handling and use, and the hazards associated with oil spills and leaks. LRCWF is a liquid fuel and enjoys all the benefits of liquid in handling, storage and transportation, and **enables coal to be used sight unseen**.

The technical feasibility of producing and utilizing a premium LRCWF made from ultra-low sulfur Alaskan subbituminous coal following hydrothermal treatment has been demonstrated at a pilot plant-scale. This LRCWF performed well in combustion tests giving excellent carbon burnout, minimal fouling, and SO_x emissions below the most stringent requirements. Process economics suggest that

LRCWF can be made from Beluga, Alaska LRC and shipped to Japan for below $17 per barrel on an oil equivalent basis. The cost for Wyoming LRCWF is about 25% less than than Alaskan LRCWF at the mine, which will offset the greater shipping costs and bring a low-cost, non-hazardous oil substitute to the industrial Gulf Coast.

A successful demonstration will offer many commercial opportunities including, sales of US made LRCWF to utility and industrial oil users, to advanced power producers using slurry-fed gasifiers, and heat engines, export to the major oil importers in the Pacific Rim, and exporting US technology, engineering, equipment and instrumentation to developing nations, particularly in Asia and Eastern Europe. The critical need is a commercial scale demonstration to support scaleup design and process economics, determine derating in oil-designed boilers and advanced power systems, and a facility capable of supplying thousands of tons of LRCWF for testing in potential end-users' facilities.

Silverado owns a gold recovery plant, idled due to low gold prices, that has about half of the equipment needed for a LRCWF demonstration plant and ample space in the buildings to accommodate the remaining equipment. Silverado has also assembled a team with all the engineering and LRCWF expertise necessary for commissioning and operating a LRCWF production and boiler test facility. The Team capabilities coupled with the existing Silverado facilities would enable a LRCWF demonstration plant to come on line much faster and at a fraction of the cost of a new plant built anywhere in the US.